

The 1999 Water report for Nellis

Source Water
Nellis AFB drinking water comes from Lake Mead and 10 ground water wells located on the main base and Craig Road. Approximately 75 percent of the drinking water comes from Lake Mead. Of that water, 97 percent is from the Colorado River. The Las Vegas Wash, which carries flood water and treated wastewater into Lake Mead, accounts for only 1.5 percent of all the water in the lake. This is significantly less flood and wastewater than you'll find in water supplies of many major cities.

Source Name: Lake Mead
Inflows: Colorado River (97.08%)
Virgin River (1.38%)
Muddy River (0.10%)
Las Vegas Wash (1.45%)

Potential Sources of Contamination:
Urban activities (fertilizers, pesticides, etc.)
Industrial activities
Wildlife activities

Source Name: Las Vegas Ground Water Aquifer
Inflows: Spring Mountain recharge
Sheep Range recharge

Potential Sources of Contamination:
Landfills
Domestic septic systems
Gas stations
(leaking underground storage tanks)

Treatment Process
Nearly all of the water in Southern Nevada is treated at the Alfred Merritt Smith Water Treatment Facility. As the water arrives through the intake pipe, it is treated with chlorine to kill potentially harmful bacteria and microscopic organisms. After disinfection, the water moves through a direct filtration process to remove harmful particles. Before the water leaves the treatment facility, it is disinfected again and treated for corrosion control. Water drawn from the ground water wells is treated with chlorine and sent through the distribution system.

Testing
Every month, scientists from Southern Nevada Water Authority collect and analyze water samples from Nellis AFB's drinking water and the Alfred Merritt Smith Water Treatment Facility. In fact, the water treatment facility technicians test even more frequently and extensively than the Safe Drinking Water Act requires. Only those substances on the EPA's primary contaminant list that are detected in Nellis AFB drinking water are listed in the test results table. Contact Bioenvironmental Engineering at (702) 653-3316 for more information

Primary Water Analysis Results
Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- **Microbial contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems and wildlife.
- **Inorganic contaminants**, such as salts and metals, which can be naturally occurring or result from urban storm runoff and industrial or domestic wastewater discharges.
- **Pesticides and herbicides**, which may come from a variety

- of sources such as agriculture, urban storm water runoff and residential use.
- **Organic chemical contaminants**, including synthetic or volatile organic chemicals, which are byproducts of industrial processes and can come from gas stations, urban storm water runoff and septic systems.
- **Radioactive contaminants**, which can be naturally occurring or be the result of industrial activities.

In order to ensure that tap water is safe to drink, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health. For more information on bottled water quality, call the International Bottled Water Association at **1-800-WATER11**.

Additional Analysis Results
These are additional substances for which Southern Nevada Water Authority (SNWA) monitors regularly. Although the EPA has not established MCLs for these substances, we believe it is important for our customers to know about anything that may affect their drinking water.

Perchlorate – Although no state or federal regulations limit the level of perchlorate in drinking water, scientists monitor regularly for the salt. The EPA has indicated that it may recommend a limit of 32 ppb. Levels found in the treated water supply from Lake Mead during 1999 were well below that concentration.

Cryptosporidium – This naturally occurring microscopic organism is found in 95 percent of all surface water bodies in the United States. If ingested, it can cause gastrointestinal distress and fever. Laboratory staff test for Cryptosporidium in both raw and treated water from Lake Mead. While it is occasionally detected in untreated lake water, technicians take all available measures to remove it during the treatment process. Chlorine is generally effective at destroying Cryptosporidium; however, the Alfred Merritt Smith Water Treatment Facility is in the process of converting to ozonation as a disinfection process. Ozonation provides unsurpassed protection against microorganisms such as Cryptosporidium.

MTBE – A chemical agent used in fossil fuels to reduce smog, methyl tertiary butyl ether (MTBE) has not been detected in either the source water or in the finished drinking water.

Additional Health Information
Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those with cancer undergoing chemotherapy, who have undergone organ transplants, with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA and Center for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline **(800) 426-4791**.

Violations
Nellis AFB had no violations of the Safe Drinking Water Act in 1999.

Exemptions and Variances
The State of Nevada requires that, in addition to the regularly scheduled filter maintenance, all drinking water treatment plants wash their filters upon restart when they have been out of service. After extensive small-scale testing of restarting filters without additional washing, the State of Nevada granted the Alfred Merritt Smith Water Treatment Facility a variance for this requirement. This testing proved to the State of Nevada that there was no negative impact to drinking water quality from this procedure. It is expected that the variance will no longer be required in 2000.

On the Horizon

Ozonation
The current chlorination disinfection process is being converted to ozonation, a highly effective disinfection technology that infuses water with ozone. This advanced disinfection technique eradicates organisms such as Cryptosporidium while reducing the amount of chlorine used in treatment. The Alfred Merritt Smith Water Treatment Facility will convert from chlorine to ozone as a primary disinfectant by 2002. The new River Mountains Water Treatment Facility will also utilize ozonation when it becomes operational that same year.

Fluoridation
The passage of Assembly Bill 284 will require the Southern Nevada Water System to begin adding fluoride to the water supply on or before March 1, 2000. There is a natural background concentration of fluoride in the water at 0.3 mg/L. This will be supplemented to produce a final concentration of 0.8 mg/L. A vote of the public in the November 2000 elections will determine if the fluoridation process continues after that date.

Frequently Asked Questions:

If tap water is really of good quality, why does it taste the way it does?

Our water's taste is caused by naturally occurring minerals and chlorine. The chlorine is added to keep the water safe from bacteria. Water quality is best measured by the amount and concentration of contaminants; we have very few contaminants in our drinking water, and those that are present are within Safe Drinking Water Act limits.

Do I need to use a bottled water?

water treatment system or drink bottled water?
Not unless you want to improve your tap water's taste or remove the minerals that cause it to be "hard". Water is considered hard if the hardness (mineral concentration) is 100 ppm or more. The average hardness in the Las Vegas Valley is 290 ppm. While many people prefer the taste of bottled water, tap water is subject to more stringent quality standards and is tested more frequently. Additionally, the average liter of bottled water costs about 1,500 times more than the same amount of tap water.

Input and Information
This report will not be mailed to consumers. If you would like a copy or have questions, please contact AWFC Office of Public Affairs, Mr. Michael Estrada or Tech. Sgt. Richard Covington, at (702) 652-2750 or 1-800-859-3804. Questions can also be mailed to AWFC/PA, 4370 N. Washington Blvd., suite 223, Nellis AFB, NV 89191-7078. The EPA's Safe Drinking Water Hotline can be reached at 1-800-426-4791.

Test results (regulated contaminants)

All data is based upon 1999 analysis, except in the case of contaminants for which annual testing is not required

SUBSTANCE	RANGE	AVERAGE	MCL (EPA LIMIT)	MCLG (EPA GOAL)	Possible Source
Antimony	ND – 3 ppb	0.3 ppb	6 ppb	6 ppb	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic	ND – 12 ppb	6 ppb	50 ppb	N/A	Erosion of natural deposits
Barium	0.07 – 0.1 ppm	0.087 ppm	2 ppm	2 ppm	Discharge of drilling waste; discharge from metal refineries;erosion of natural deposits
Chromium	ND - 9 ppb	4 ppb	100 ppb	100 ppb	Erosion of natural deposits
Total Trihalomethanes	ND – 85 ppb	43 ppb	100 ppb****	0 ppb	By-product of drinking water chlorination
Selenium	2 ppb	2 ppb	50 ppb	50 ppb	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
Fluoride	0.14 – 0.65 ppm	0.24 ppm	4 ppm	4 ppm	Erosion of natural deposits
Nitrate	0.28 – 0.98 ppm	0.46 ppm	10 ppm	10 ppm	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits
Lead (1997)	ND (90 th percentile)	N/A	15 ppb*	50 ppb	Corrosion of household plumbing systems; erosion of natural deposits
Copper (1997)	0.60 ppm (90 th percentile)	N/A	1.3 ppm*	1.3 ppm	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood reservatves
Gross Alpha Activity	2.82 – 4.13 pCi/L	3.48 pCi/L	15 pCi/L	0 pCi/L	Erosion of natural deposits; decay of man-made deposits
Gross Beta Activity	5.18 – 8.26 pCi/L	6.28 pCi/L	50 pCi/L**	0 pCi/L	Erosion of natural deposits; decay of man-made deposits
Turbidity***	0.20 NTU	N/A	0.5 NTU	N/A	Soil Runoff
Total Coliforms	2.0% Positive (samples per month)	N/A	<5% Positive (samples per month)	0 Positive	Naturally present in the environment

* Action level: 90% of samples taken must be below this amount
** The actual MCL for beta particles is 4 mrem/year. EPA considers 50 pCi/l to be the level of concern for beta particles
*** Turbidity- 100% samples were below 0.5 NTU in 1998
**** The EPA limit is based on an annual average

Important Definitions

Maximum contaminant level goal (MCLG) – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
Maximum contaminant level (MCL) – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
Action level – The concentration, which, if exceeded, triggers a treatment, or other requirement, which a water system must follow.
Variance – State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
Treatment Technique – A required process intended to reduce the level of a contaminant in drinking water.

ND – Not detected
Turbidity – Caused by suspended matter in water, turbidity may consist of clay, silt, and microscopic organisms. It is measured as a way to determine if the water treatment plant is operating efficiently and can indicate if there are problems in the distribution system from cross-connections or line breaks.
Disinfection byproduct – A substance created by chemicals or processes used for disinfection.
NTU – Nephelometric Turbidity Unit – A measurement of water's clarity
ppb – Part per billion – A unit used to describe the levels of detected contaminants. Equivalent to about 1 dissolved aspirin tablet in a 100,000 gallon (25 meter) swimming pool
ppm – Part per million - A unit used to describe the levels of detected contaminants. Equivalent to about ½ of a dissolved aspirin tablet in a full bathtub of water (about 50 gallons)

pCi/L – Picocuries per liter - a measure of radioactivity in water. Low levels of radiation occur naturally in many water systems, including the Colorado River.

UNREGULATED CONTAMINANTS

All of the listed unregulated constituents except sulfate occurs as a result of the disinfection process. At present, the Environmental Protection Agency (EPA) does not consider these constituents to be a public health concern. The EPA is monitoring these constituents to determine if future regulation may be required.

SUBSTANCE	RANGE	AVERAGE
Well Water		
Sodium	16.1 – 97.2 ppm	71 ppm
Sulfate	56 – 223 ppm	190 ppm
Surface Water		
Chloral Hydrate	0.7 – 1.8 ppb	1.2 ppb
Total Haloacetic Acids	11 – 41 ppb	18 ppb
Total Haloacetoneitriles	3.5 – 3.9 ppb	3.7 ppb
Total Organic Halides	47 – 100 ppb	77 ppb
Free Chlorine	1.2 – 1.5 ppm	1.4 ppm